Amendments of the Claims:

A detailed listing of all claims in the application is presented below. This listing of claims will replace all prior versions, and listings, of claims in the application. All claims being currently amended are submitted with markings to indicate the changes that have been made relative to immediate prior version of the claims. The changes in any amended claim are being shown by ~~strikethrough~~ (for deleted matter) or underlined (for added matter).

1 - 12. (Cancelled)

13. (Currently Amended) An ultra miniature integrated cardiac pacemaker, comprising:

a) a control unit that outputs at least one control signal;

b) a heart stimulating means that responds to the control signal and electrically stimulates heart tissue;

c) an electrocardiographic information detecting means that detects a plurality of electrocardiographic information and outputs the electrocardiographic information to the control unit;

d) a transmitting means that modulates the electrocardiographic information and control signal and sends the modulated electrocardiographic information and the modulated control signal outside;

e) a receiving means that demodulates information transmitted from outside; and

f) a power unit that supplies the driving power;

wherein the pacemaker requires no chest incision, and can be implanted into a heart by attaching the pacemaker to a tip of a catheter and extracting the catheter after implantation;

wherein the pacemaker is designed such that information sent from other pacemakers implanted into the heart ~~outside~~ is input into the control unit;

wherein the control unit outputs the control signal based on information selected from the group consisting of ~~information sent from outside~~ information sent from other pacemakers implanted into the heart; electrocardiographic information; and a combination of information sent from other pacemakers implanted into the heart ~~sent from outside~~ and electrocardiographic information, ~~wherein the information sent from outside includes information sent from other pacemakers when a plurality of pacemakers are implanted into a heart; and wherein the control unit outputs the control signal based on information from the other pacemakers~~;

wherein the control unit includes a stimulation timing determining means that decides the timing of stimulation to generate control signals, and a stimulation timing changing means that changes the timing of stimulation to generate control signals;

wherein the control unit changes the stimulation timing when certain conditions are fulfilled;

wherein the power unit is a biological fuel cell that extracts electrons from oxidative reactions of biological fuels;

wherein the biological fuel cell is composed of an anode and a cathode;

wherein the anode comprises an anode electrode and an immobile layer formed on a surface of the anode electrode by immobilization of mediators and oxidative enzymes for biological fuels, wherein said immobile layer prevents oxygen existing in a biological body from contacting said anode electrode;

wherein the cathode comprises a cathode electrode and a coating material formed on a surface of the cathode electrode, wherein the cathode electrode is composed of ~~requires~~ a catalyst to enhance a reaction involving reduction of oxygen, and wherein said coating material is capable of preventing

permeation of reactive substances other than oxygen and allowing permeation of oxygen and hydrogen ions;

wherein the biological fuel cell uses an electrolyte solution selected from the group consisting of blood; body fluid; and blood and body fluid, and utilizes biological fuels and oxygen in the electrolyte solution without the need for a container to contain the electrolyte solution or a metabolic product; and

wherein said anode and said cathode are adapted to contact the electrolyte solution.

14-18. (Cancelled)

19. (New) An ultra miniature integrated cardiac pacemaker, comprising:

a) a control unit that outputs at least one control signal;

b) a heart stimulating means that responds to the control signal and electrically stimulates heart tissue;

c) an electrocardiographic information detecting means that detects a plurality of electrocardiographic information and outputs the electrocardiographic information to the control unit;

d) a transmitting means that modulates the electrocardiographic information and control signal and sends the modulated electrocardiographic information and the modulated control signal outside;

e) a receiving means that demodulates information transmitted from outside; and

f) a power unit that supplies the driving power;

wherein the pacemaker requires no chest incision, and can be implanted into a heart by attaching the pacemaker to a tip of a catheter and extracting the catheter after implantation;

wherein the pacemaker is designed such that information sent from other pacemakers implanted into the heart is input into the control unit;

wherein the control unit outputs the control signal based on information comprising information sent from other pacemakers implanted into the heart;

wherein the control unit includes a stimulation timing determining means that decides the timing of stimulation to generate control signals, and a stimulation timing changing means that changes the timing of stimulation to generate control signals;

wherein the control unit changes the stimulation timing when certain conditions are fulfilled;

wherein the power unit is a biological fuel cell that extracts electrons from oxidative reactions of biological fuels;

wherein the biological fuel cell is composed of an anode and a cathode;

wherein the anode comprises an anode electrode and an immobile layer formed on a surface of the anode electrode by immobilization of mediators and oxidative enzymes for biological fuels, wherein said immobile layer prevents oxygen existing in a biological body from contacting said anode electrode;

wherein the cathode comprises a cathode electrode and a coating material formed on a surface of the cathode electrode, wherein the cathode electrode is composed of a catalyst to enhance a reaction involving reduction of oxygen, and wherein said coating material is capable of preventing permeation of reactive substances other than oxygen and allowing permeation of oxygen and hydrogen ions;

wherein the biological fuel cell uses an electrolyte solution selected from the group consisting of blood; body fluid; and blood and body fluid, and

utilizes biological fuels and oxygen in the electrolyte solution without the need for a container to contain the electrolyte solution or a metabolic product; and

wherein said anode and said cathode are adapted to contact the electrolyte solution.

20. The pacemaker of claim 19, wherein the control unit outputs the control signal based on additional information comprising electrocardiographic information.